MA 173 ASSIGNMENT SHEET

Textbook: Weir, Hass, Giordano, *Thomas Calculus 12th Ed* (2010). Fall 2010

Chapter 5 §5.1: p.304 # 9(b), 10(b), 11(b), 12, 16.

§5.2: p.312 #1, 2, 9, 10, 11, 12, 18, 36(b).

Notes: For #9 and #10 you must explain why your answer is right. For #11 and #12, write each of these sums in $\sum$ notation in three different ways; see #7 on p.312 for a hint.

§5.3:[1] p.321 #10, 20, 60, 83.

Additional Problem A. (See page 3 below).

§5.4: p.333 #20, 23, 39(ab), 40(ab), 57, 58, 60, 69, 70, 83. (*Hints*: For #39 and #40, see Example 2(c)).

§5.5: p.342 #18, 20, 22, 28, 30, 34, 43, 59 (*Hint*: For #59, see Example 5 on p.335).

§5.6: p.350 #16, 17, 23, 25, 28, 32, 36, 57, 58, 59, 60, 64, 66, 67, 112, 113(b). (*Hints*: For #23, see Example 9 on p. 341. For #112: substitute $u = 1 - x$. For #113, substitute $u = -x$).

Additional Problem B.

Chapter 6 §6.1: p.371 #15, 22, 29, 30, 37, 41, 42, 44, 51(ad), 52(a), 53(c).

§6.2: p.379 #1, 2, 5, 6, 7, 9, 10, 11, 29, 40.

§6.3: p.386 #1, 2, 10, 22.

§6.4: p.391 #13, 18, 22, 32.

§6.5: p.398 #12, 21, 22, 30, 36.

§6.6: p.411 #28, 32, 40, 42.

Chapter 7 §7.2: p.433 #18, 25, 26, 38.

Review §4.5:[2] p.261 #14, 16, 19, 24, 25, 43, 45, 46.

§7.4: p.448 #8, 10, 16, 18 (be sure to justify your answer).

Review: Inverse functions (§1.6, 3.8, 3.9).

Additional Problem C.

Chapter 8 §8.1: p.459 #3, 5, 6, 7, 8, 9, 10, 16, 17, 20, 22, 25, 29, 38, 42, 50 (Do NOT use integral tables for any of these).

§8.2: p.466 #8, 17, 19, 20, 25, 32, 41, 42, 45, 46, 47, 56, 66.

§8.3: p.470 #2, 7, 8, 10, 17, 18, 23, 24, 25, 44. (Do not use integral tables for these but you may use the formula for the integral of $\sec u$).

§8.4: p.479 #10, 11, 12, 14, 15, 16, 17, 19, 20, 30, 32.

§8.7: p.505 #2, 11, 12, 13, 17.

Chapter 10 §10.1:[3] p.559 #4, 16, 20, 32, 37, 38, 39, 41, 42, 45, 46, 51, 52, 60.

§10.2: p.569 #2, 8, 9, 14, 19, 20, 28, 34, 51, 55, 90, 93.

§10.3: p.575 #8, 32, 34, 58.

Additional Problem D.

[1] Skip Example 1.
[2] Skip Theorem 7.
[3] Skip p.733-734.

§10.4: p.580 #5, 14, 15, 18, 22, 23, 24, 26, 33, 34.

§10.5: p.585 #12, 15, 18, 19, 20, 21, 33, 34, 37, 58.

§10.6: p.591 #2, 8, 11, 15, 18, 23, 27, 49, 51.

§10.7: p.600 #3, 6, 7, 8, 11, 12, 19, 28, 30, 40.

§10.8:[4] p.606 #3, 8, 11, 16, 28, 30, 36 (explain how you got your answers).

§10.9:[5] p.613 #6, 18, 30, 34.

§10.10:[6] p.620 #30, 34, 38, 58, 66.

Chapter 11 §11.1: p.634 #6, 8, 14, 20, 23, 26, 34, 40.

§11.2: p.643 #4, 8, 16, 20, 24, 28, 30, 32, 34, 38, 47, 48.

§11.3: p.648 #2, 6(deh), 8(ac), 12, 16, 36, 38, 50, 52, 64.

§11.4: p.652 #4, 6, 10, 12, 18, 20, 26.

§11.5: p.656 #4, 6, 20, 22, 28.

Notes: (1) Your instructor may make changes to these assignments, so please check with your instructor to be sure that you do the correct problems at the correct time. Show your work to get full credit (unless the problem really has only one step).

(2) You may find it useful to review materials covered in §1.5, 1.6, 3.5-3.8.

(3) During the last two weeks of the semester, you will be provided an opportunity to evaluate this course and your instructor(s). To this end, Purdue has transitioned to online course evaluations. On Monday of the fifteenth week of classes, you will receive an official email from evaluation administrators with a link to the online evaluation site. You will have two weeks to complete this evaluation. Your participation in this evaluation is an integral part of this course. Your feedback is vital to improving education at Purdue University. I strongly urge you to participate in the evaluation system.

[4]Skip Example 4.

[5]Skip discussion on remainder estimates.

[6]Skip discussion on the binomial series and Euler's identity.

Additional problems:

A. In this course we will use the following definition for the integral:

$$\int_a^b f(x)\,dx = \lim_{n\to\infty} \sum_{i=1}^{n} f\left(a + i\frac{b-a}{n}\right) \cdot \frac{b-a}{n},$$

and the sum $\sum_{i=1}^{n} f\left(a + i\frac{b-a}{n}\right) \cdot \frac{b-a}{n}$ is called a *Riemann sum.* (The book gives a more complicated definition which is needed for work with discontinuous functions but will not be needed in this course. You may have seen Riemann sums in your high school course. The Riemann sums we are using have right-hand endpoints and equal subintervals).

Use the above simplified definition of Riemann sums and integrals to:

1) Write the following as a definite integral $\int_a^b f(x)\,dx$ (that is, figure out what a, b, and f are in this example):

$$\lim_{n\to\infty} \sum_{i=1}^{n} \left(3 + i\frac{2}{n}\right)^2 \cdot \frac{2}{n}.$$

2) Write the following integral as a limit of Riemann sums.

$$\int_1^3 (x^3 - 2x)\,dx.$$

B. 1) Evaluate the integral $\int \frac{dx}{3x-2}$.

2) Evaluate the integral $\int \frac{e^{2x}}{e^{2x}-2} dx$.

C. Evaluate the following integrals:

1. $\int \frac{1}{\sqrt{1-9x^2}} dx$.
2. $\int \frac{1}{1+4x^2} dx$.
3. $\int \frac{x}{4+x^4} dx$.
4. $\int \frac{e^x}{1-e^{2x}} dx$.
5. $\int \frac{e^x}{1-e^x} dx$.

D. Use the integral test to decide whether the following series converge or diverge:

1. $\sum_{n=1}^{\infty} \frac{3n^2}{n^3+1}$.
2. $\sum_{n=1}^{\infty} \frac{3n^2}{(n^3+1)^2}$.
3. $\sum_{n=1}^{\infty} \frac{1}{\sqrt{n}(n+1)}$.
4. $\sum_{n=1}^{\infty} \frac{1}{n(\ln n)^2}$.